A short introduction to microsimulation

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University of Antwerp

Microsimulation Tax-Benefit Modelling

Micro: using individual decision units (here: households and individuals living therein; survey or administrative data)

Simulation: application of a set of rules that may change the state or behaviour of these units

- **Tax-benefit**: calculation of benefit entitlements and tax liabilities for a representative micro-data sample of households, to calculate disposable incomes
- **Core framework** = static, arithmetic, with focus on the intended effects of the tax-benefit systems

Microsimulation Tax-Benefit Modelling

- Possibility to look quite precisely at the aims of socio-economic policy, the instruments applied and the structural changes for those concerned
- Ideal instrument for "What if" questions
- Very suitable to calculate first-order effects of tax-benefit systems
- Possible applications:
  - The effect of policy changes over time
  - Comparison of income position and distribution before and after introduction of policy measure(s) => measuring impact of reforms, policy alternatives
  - International comparisons, policy swapping
  - Calculation of budget constraints
  - …

The impact of asset tests in Europe: an application to minimum income schemes in Belgium and Germany

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Singling out the truly needy: the role of asset testing in European minimum income schemes

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The puzzle

- Assets have an important impact on living standards (Azpitarte, 2012; Brandolini et al., 2010; OECD, 2013; Stiglitz et al., 2009)
- Income poor are not necessarily asset poor (Kuypers and Marx, 2018)

- How does social policy take this into account?
- What is the impact of different approaches on social outcomes?

Scope of the paper

- Assess the design of asset tests in minimum income schemes in the European Member States
- Assess the impact of different asset tests in minimum income schemes on eligibility and poverty

Outline

- Asset tests in European minimum income schemes
- Data and method
- Results
- Discussion and conclusion

Asset tests in European minimum income schemes

- Omnipresent

- But with important differences
  - Disqualification vs. fictional rate of return
  - Different thresholds
  - Differential treatment of specific goods, movable and immovable property vs. joint assessment

How are assets taken into account?

	Disqualification	Fictional rate of return below disqualification threshold	Fictional rate of return
countries	AT BG CY CZ DE DK EL FI HR HY LT LV NL SE SI SK	MT PT RO UK	BE IE LU

Discretionary: EE (and PL and FR)

Exceptions for specific types of assets

Immovable property

- Family home is usually exempt (conditions may apply)
- Other real estate property is usually included
  - may disqualify, count for the value of total wealth included in the disqualification threshold, or specific rules

Movable property

- Savings usually count to disqualification threshold
  - Exceptions: pension savings, home maintenance, discretionary assessment
- Goods
  - Vehicle: usually exempt if necessary
  - Disqualifying: helicopters, jewellery, yachts
  - Exempt: household appliances, goods of children

Country selection

	Disqualification	Fictional rate of return below disqualification threshold	Fictional rate of return
countries	AT BG CY CZ DE DK EL FI HR HY LT LV NL SE SI SK	MT PT RO UK	BE IE LU

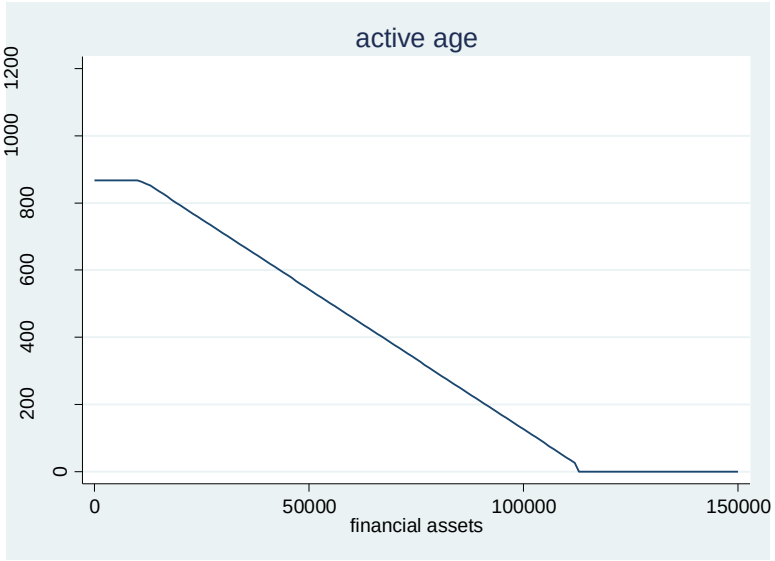
Discretionary: EE (and PL and FR)

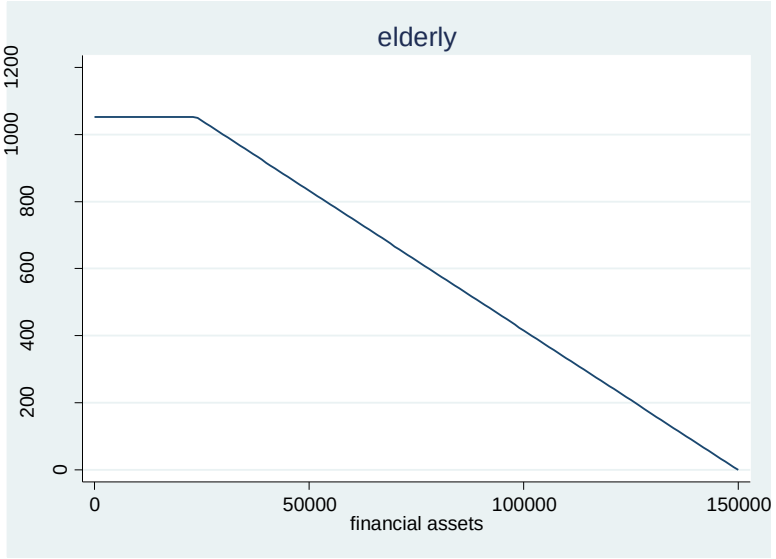
Asset tests in Belgium

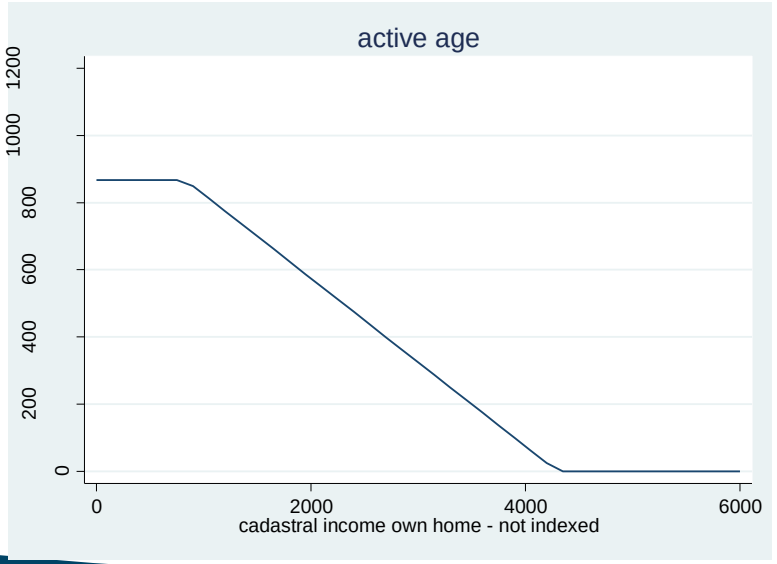
- Assets are included at a fictional rate of return
- Differentiation between real estate and financial capital
- More favourable for the elderly

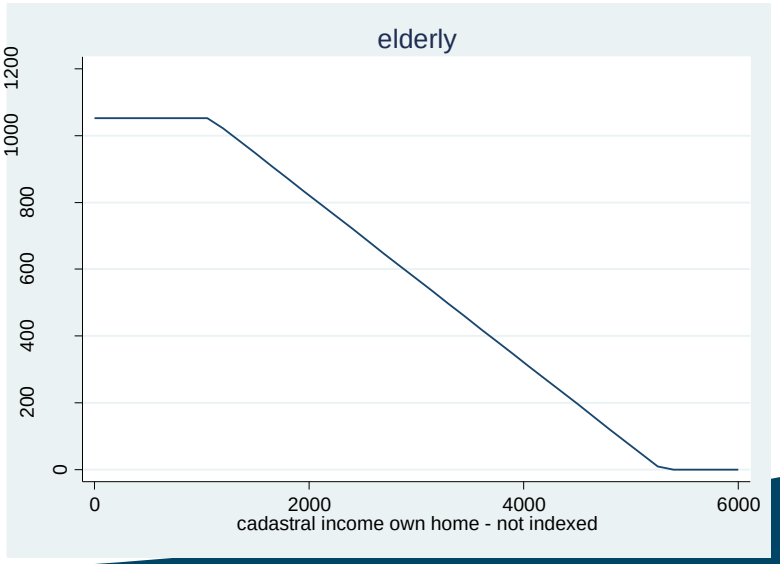
➔ Illustration with typical case: single person with increasing level of assets

Asset tests in Belgium







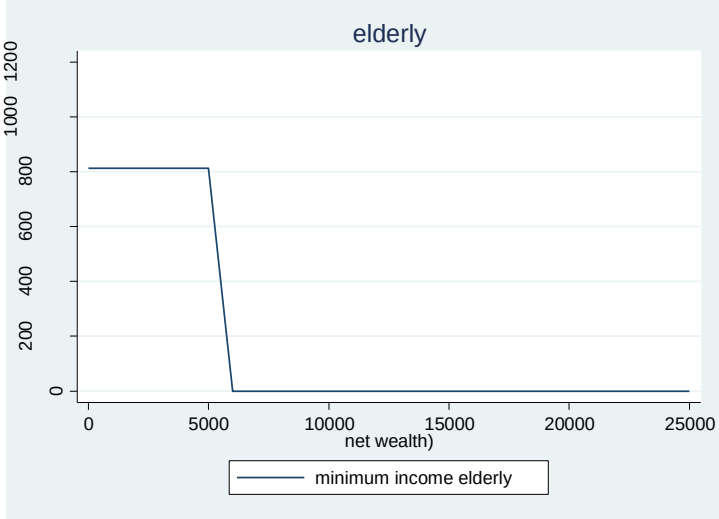


Asset tests in Germany

- Assets above a certain level cause *in principle* ineligibility to the benefit
- All assets are combined (some exceptions: value of a modest family home is exempt)
- Elderly treated relatively similar

➔ Illustration with typical case: single person with increasing level of assets

Asset tests in Germany



Data and method

- Household Finance and Consumption Survey
  - 2013 wave, incomes and assets uprated to 2017

- Microsimulation of the impact of asset tests with EUROMOD
  - Policy year 2017
  - Simulate net income components from gross HFCS income information
  - Expanded with more detailed MIP asset tests
  - First-order, mechanical effects of asset test!
  - No correction for non-take-up

Results

Eligibility of MIP benefits, under different asset test assumptions

		Eligibility to MIP scheme for active age, relative to active age population	Confidence interval	Eligibility to MIP schemes for active age and elderly population, relative to adult population	Confidence interval
BE	FullAssetTest	7.46%	[5.93%;8.99%]	7.74%	[6.49%;9.00%]
	NoCadastralIncome	7.55%	[6.04%;9.06%]	8.04%*	[6.76%;9.32%]
	NoCapital	7.99%***	[6.43%;9.56%]	8.61%***	[7.26%;9.96%]
	NoAssetTest	8.03%***	[6.47%;9.58%]	8.98%***	[7.62%;10.34%]
DE	FullAssetTest	8.25%	[7.28%;9.23%]	7.92%	[7.05%;8.78%]
	NoAssetTest	11.14%***	[10.04%;12.23%]	11.90%***	[10.85%;12.94%]

Note: */**/***: significant difference with estimated eligibility at FullAssetTest at p< 0.05/0.01/0.001 level (with stata's mi testtransform command). FullAssetTest: means-test as legislated; NoCadastralIncome: Part of the means-test including real estate value is disregarded; NoCapital: part of the means-test including financial assets is disregarded; NoAssetTest: part of the original means-test focusing on wealth is disregarded.
Source: HFCS, own calculations

Who are those excluded by asset tests?

		Belgium				Germany			
		original	confidence interval	excluded	confidence interval	original	confidence interval	excluded	confidence interval
monthly median benefit		519	[372;666]	82***	[27;138]	469	[405;534]	284***	[207;362]
education	low	0.52	[0.43;0.62]	0.43	[0.27;0.6]	0.41	[0.34;0.47]	0.13***	[0.07;0.19]
	middle	0.30	[0.22;0.38]	0.36	[0.18;0.55]	0.50	[0.43;0.56]	0.64*	[0.55;0.74]
	high	0.17	[0.11;0.24]	0.20	[0.07;0.34]	0.10	[0.07;0.13]	0.23***	[0.16;0.3]
labour status	other	0.19	[0.12;0.27]	0.25	[0.08;0.42]	0.08	[0.05;0.11]	0.02***	[0;0.04]
	work	0.19	[0.11;0.26]	0.08*	[0;0.15]	0.51	[0.46;0.57]	0.46	[0.37;0.55]
	pension	0.23	[0.16;0.31]	0.57***	[0.39;0.75]	0.17	[0.12;0.22]	0.42***	[0.33;0.51]
	unemployed	0.38	[0.31;0.45]	0.10***	[-0.02;0.22]	0.18	[0.15;0.22]	0.05***	[0.02;0.09]
	sick					0.06	[0.03;0.09]	0.04	[0.02;0.07]
mean age		48	[45;52]	62***	[54;71]	45	[43;47]	57	[54;61]
mean number of adults		1.96	[1.72;2.21]	2.16	[1.63;2.68]	1.65	[1.53;1.77]	1.46*	[1.33;1.6]
mean number of children		0.41	[0.24;0.59]	0.25	[-0.09;0.6]	0.36	[0.28;0.44]	0.16***	[0.09;0.22]

Note: original beneficiaries: minimum income beneficiaries under the original asset test. Excluded beneficiaries: the group of beneficiaries that became eligible in the no asset test scenario. */**/***: significant difference with estimated share of original beneficiaries at p< 0.05/0.01/0.001 level, computed with stata's mi testtransform command.

Source: HFCS data, own calculations

Who are those excluded by asset tests?

- Some other form of income
- More often pensioners, less often unemployed
- Older

- And, in Germany, more highly educated

Poverty rates among the total population under the assumption of full take up, different asset test scenarios

Poverty rate at 60% of median equivalent disposable household income			
BE, all	FullAssetTest	12.61%	[10.30%;14.93%]
	NoAssetTest	12.53%	[10.24%;14.82%]
DE, all	FullAssetTest	16.64%	[15.10%;18.18%]
	NoAssetTest	15.77%***	[14.16%;17.39%]
Poverty rate at 40% of median equivalent disposable household income			
BE, all	FullAssetTest	1.17%	[0.19%;2.14%]
	NoAssetTest	0.95%	[0.05%;1.85%]
DE, all	FullAssetTest	4.86%	[4.18%;5.54%]
	NoAssetTest	3.67%***	[3.03%;4.31%]
Mean poverty gap among the poor (in euro)			
BE, all	FullAssetTest	177	[147;207]
	NoAssetTest	165	[133;196]
DE, all	FullAssetTest	276	[251;302]
	NoAssetTest	225***	[206;244]

Note: */**/***: significant difference with estimated poverty rate/mean poverty gap at FullAssetTest at p< 0.05/0.01/0.001 level (using stata's mi testtransform command). FullAssetTest: means-test as legislated; NoCadastralIncome: Part of the means-test including real estate value is disregarded; NoCapital: part of the means-test including financial assets is disregarded; NoAssetTest: part of the original means-test focusing on wealth is disregarded.
Source: HFCS: own calculations

Budget, efficiency and effectiveness of MIP schemes with and without asset tests

	Belgium		Germany	
	Full asset test	No asset test	Full asset test	No asset test
Total budget MIP, in million euro (1)	3840	4322	33240	44880
Budget to pre-transfer poor, in million euro (2)	3186	3469	30480	40920
Poverty gap reduction, in million euro (3)	2781	3013	28440	37920
Vertical efficiency of the program [(2)/(1)]	83%	80%	92%	91%
Poverty reduction efficiency of the program [(3) / (1)]	72%	70%	86%	84%

Note: Annual budgets under the assumption of full take-up.

Conclusion

- Assets are commonly included in MIP means-tests in EU MSs

- Asset tests lower eligibility in BE and DE
  - With impact on poverty rates in DE
  - Some indication that asset tests exclude the better off of the poor

Thank you for your attention